

What is claimed is:

1. A three-dimensional display apparatus comprising:  
displaying means for displaying N images of different viewing  
5 points;

image-forming means for forming said N images displayed  
by said displaying means at predetermined image-forming  
positions; and

light-condensing means for individually condensing said  
10 images to N observing positions that correspond to said N  
viewing points, said light-condensing means being disposed  
at said image-forming positions at which said N images are  
formed, wherein

said light-condensing means is a transmission-type or  
15 reflection-type hologram screen having a function of  
diffracting and condensing images formed by said image-forming  
means to said N observing positions, and

arrival positions of rays of light whose direction  
remains unchanged by said light-condensing means do not  
20 coincide with said observing positions.

2. The three-dimensional display apparatus according to  
Claim 1, wherein said N is three or more.

25 3. The three-dimensional display apparatus according to  
Claim 1, wherein said images of said N viewing points are images  
of an same object captured from N different viewing points.

4. The three-dimensional display apparatus according to  
30 Claim 1, wherein said light-condensing means comprises a  
hologram screen comprising a multiple hologram or a

multi-layered hologram.

5. The three-dimensional display apparatus according to Claim 1, wherein said light-condensing means condenses said  
5 picture images to predetermined observing positions on a predetermined observation plane.

6. The three-dimensional display apparatus according to Claim 5, wherein said predetermined observation plane is a  
10 plane that is substantially parallel to said light-condensing means.

7. The three-dimensional display apparatus according to Claim 5, wherein  
15 said predetermined observation plane is substantially parallel to said light-condensing means, and comprises a plurality of planes parallel to said light-condensing means, and

distances between said light-condensing means and said  
20 plurality of planes are different from each other.

8. The three-dimensional display apparatus according to Claim 5, wherein a gap between two or more observing positions of said N observing positions is substantially equal to a gap  
25 between eyes of a human being, said two or more observing positions being positioned on the same horizontal line of the same observation plane.

9. A three-dimensional display apparatus comprising:  
30 displaying means for displaying N images of different viewing points;

image-forming means for forming said N images displayed by said displaying means at predetermined image-forming positions; and

light-condensing means for individually condensingsaid  
5 images to N observing positions that correspond to said N viewing points, said light-condensing means being disposed at said image-forming positions at which said N images are formed, wherein:

said image-forming means forms images of said N viewing  
10 points from N different positions to said light-condensing means,

said light-condensing means comprises a recursive reflection-type screen for recursively reflecting each image formed by said image-forming means, and a half mirror for  
15 condensingsaidrecursivelyreflectedimagetosaidNobserving positions, said half mirror being disposed between said image-forming means and said recursive reflection-type screen.

20 10. The three-dimensional display apparatus according to Claim 9, wherein said N is three or more.

11. The three-dimensional display apparatus according to Claim 9, wherein said images of said N viewing points are images  
25 of an same object captured from N different viewing points.

12. The three-dimensional display apparatus according to Claim 9, wherein said recursive reflection-type screen is inclined in relation to a plane on which said image-forming  
30 means is disposed in a direction in which an incident angle from said image-forming means increases.

13. A three-dimensional display apparatus comprising:  
displays for displaying N images of different viewing  
points;
- 5 lenses for forming said N images displayed by said  
displays at predetermined image-forming positions; and  
a light-condenser for individually condensing said  
images to N observing positions that correspond to said N  
viewing points, said light-condenser being disposed at said  
10 image-forming positions at which said N images are formed,  
wherein:  
said light-condenser is a transmission-type or  
reflection-type hologram screen having a function of  
diffracting and condensing images formed by said lenses to  
15 said N observing positions, and  
arrival positions of rays of light whose direction  
remains unchanged by said light-condenser do not coincide with  
said observing positions.
- 20 14. A three-dimensional display apparatus comprising:  
displays for displaying N images of different viewing  
points;  
lenses for forming said N images displayed by said  
displays at predetermined image-forming positions; and  
25 a light-condenser for individually condensing said  
images to N observing positions that correspond to said N  
viewing points, said light-condenser being disposed at said  
image-forming positions at which said N images are formed,  
wherein:  
30 said lenses forms images of said N viewing points from  
N different positions to said light-condenser, and

said light-condenser comprises a recursive reflection-type screen for recursively reflecting each image formed by said lenses, and a half mirror for condensing said recursively reflected image to said N observing positions,  
5 said half mirror being disposed between said lenses and said recursive reflection-type screen.